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SOCIAL FACILITATION EFFECT AS PERCEIVED BY ATHLETES

by

© DENNIS WAYNE HRYCAIKO

A THESIS

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled SOCIAL FACILITATION EFFECT AS PERCEIVED BY ATHLETES submitted by Dennis Wayne Hrycaiko in partial fulfilment of the requirements for the degree of Master of Art.

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ABSTRACT

The primary purpose of the study was to determine if there are significant differences in perceived social facilitation effects between athletes of selected competitive physical activities. A secondary purpose was to develop a scale to measure these effects. In addition to the Perceived Social Facilitation Questionnaire, Spielberger's State and Trait Anxiety Inventory was administered to the subjects to determine if significant differences in anxiety levels existed between the athletes of the four experimental groups.

The study sample was limited to thirty-five male athletes participating on a team involved in one of four competitive athletic activities. An integral part of the study was the selection of four sport activities which involved competition in a specific social situation. These were as follows: wrestling (individual-spectator), volleyball (coaction-spectator), cross-country skiing (individual-non-spectator), and water polo (coaction-non-spectator).

Statistical procedures used in analyzing the data included a test-retest reliability check, which demonstrated the high reliability of both the Perceived Social Facilitation Questionnaire and the Trait Anxiety Inventory; a two-way analysis of variance (Anova 25) which demonstrated that significant differences existed within the groups and scales;

an one-way analysis of variance (Anova 11); and a Scheffé multiple comparison procedure. The Scheffé multiple comparison procedure demonstrated that no significant differences existed between the experimental groups on either perceived social facilitation effects or trait anxiety. However, significant differences were found between the wrestling and volleyball groups on state anxiety. Furthermore, significant differences were found to exist between each of the three scales for each of the two individual competitive activity groups, wrestling and cross-country skiing. No further significant differences occurred.

It was concluded that there were no significant differences between the athletes of selected competitive physical activities on perceived social facilitation. In addition it was concluded that characteristics of an activity such as physical contact and individual performance are more conducive to increasing anxiety than other factors such as presence or absence of an audience.

Finally, it was recommended that further study of Cottrell's evaluation apprehension explanation of social facilitation effects was required, as it appears to have little effect on experienced, competent athletes. It was also suggested that further study be undertaken using the Perceived Social Facilitation Questionnaire to determine conclusively that it has the sensitivity required to accurately measure the athletes' perceptions of the audience.

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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

In recent years considerable progress has been made towards understanding the relationship between social facilitation and motor performance. However, an apparent weakness in the research to date, has been the failure of researchers to examine all the relevant aspects of the problem. Invariably, social facilitation studies have used the controlled laboratory experimental setting and although this method allows one to rather accurately measure changes in performance, it fails to provide the researcher with any understanding of the variables operating within the individual which contribute to his performance.

Cratty (1967b, p. 153) has stated that there is a need for studies to explore the athlete's feelings towards the audience. Research exploring this particular aspect of social facilitation has been neglected and data is needed to determine if there is a relationship between the intensity of the athlete's feelings towards the audience and his performance.

The possibility of a relationship between the intensity of an athlete's feelings towards the audience and his performance is more relevant since Cottrell et al (1968)

suggested that social facilitation was the result of a learned source of drive. This interpretation differed from that of Zajonc (1965), who had stated that social facilitation resulted from the mere presence of observers. According to Zajonc (1965) the presence of observers enhances the emission of dominant responses. On the basis of this generalization, Zajonc (1965) has hypothesized "that the mere presence of others increases the individual's general arousal or drive level" (p. 273).

Cottrell (1967, pp. 91-110) has provided a valuable addition to Zajonc's theory. Whereas Zajonc (1965) has proposed that the mere presence of others is a source of drive, Cottrell (1967, pp. 91-110) maintains that the presence of others is a learned source of drive induced by evaluation apprehension. Studies by Cottrell, Wack, Sekerak, and Rittle (1968), Henchy and Glass (1968), Klinger (1969), Martens and Landers (1972), have found support for Cottrell's (1967, pp. 91-110) hypothesis.

Studies which have attempted to examine Zajonc's drive theory interpretation of the relationship between anxiety and audience presence have also resulted in conflicting evidence. Cox (1966, 1968) and Ganzer (1968) found that high anxiety subjects performed better than low anxiety subjects in a learning situation, provided that no observers were present. In the presence of observers it was found that the performance of the high anxiety subjects was hindered, while the performance of the low anxiety subjects

was facilitated. These findings demonstrate an interaction between an individual's anxiety level and audience presence; and are therefore consistent with Zajonc's drive theory interpretation of social facilitation.

However, Martens (1969) and Quarter and Marcus (1971) have reported studies which have found no evidence that an individual's anxiety level and audience presence interact in a manner consistent with drive theory. As a result, the relationship between anxiety level and audience presence remains to be conclusively determined.

The findings of Cottrell and Zajonc, as well as Cratty's suggestion of the need to explore the athlete's feelings towards audience, were of fundamental importance in developing the hypotheses to be tested in this study.

The Problem

The purposes of this study were:

1. To develop an instrument to measure social facilitation effects as perceived by the athlete.
2. To determine if there are significant differences in perceived social facilitation effects between athletes of selected physical activities.
3. To evaluate whether or not the presence of others increases the individual's anxiety level.
4. To test the following null hypotheses:
   a. That there will be no significant differences between spectator sport athletes and non-spectator sport

athletes on perceived social facilitation scores.

b. That there will be no significant differences between the individual sport athletes and coaction sport athletes on perceived social facilitation scores in the spectator-present competitive situation.

c. That there will be no significant differences between the individual sport athletes and the coaction sport athletes on perceived social facilitation scores in the non-spectator competitive situation.

d. That there will be no significant differences between spectator sport athletes and non-spectator sport athletes on state anxiety scores in a competitive situation.

e. That there will be no significant differences between individual sport athletes and coaction sport athletes on state anxiety scores in the spectator competitive situation.

f. That there will be no significant differences between individual sport athletes and coaction sport athletes on state anxiety scores in the non-spectator competitive situation.

g. That there will be no significant differences between the state and trait anxiety scores of the individual spectator athletes.

h. That there will be no significant differences between the state and trait anxiety scores of the coaction spectator athletes.

Importance of the Study

Social facilitation research is of importance to coaches and physical educators because of the wide applicability of motor performance in sport and physical education. The possibility of a relationship between the intensity of an athlete's feelings towards the audience and his performance is of increased importance to physical educators and coaches since Cottrell et al (1967) suggested that social facilitation was the result of a learned source of drive. This explanation of social facilitation has received considerable support and serves to emphasize the need for data measuring the athlete's feelings towards audience in a competitive situation.

If a relationship was found between the intensity of an athlete's feelings towards audience and performance, coaches and physical educators would then be better able to understand and predict an individual's performance. In addition, learning theory could be applied to control or manipulate audience-induced drive. Undoubtedly the implications for the learning and performing of motor skills would have far reaching effects in both sport and physical education.

Delimitations

1. The sampling of subjects was limited to three teams of male intercollegiate varsity athletes at the University of Alberta and a fourth team of comparable age from

the Edmonton Junior Men's Water Polo League.

2. The sampling of the subjects was limited to male athletes participating in one of the following four competitive sports: wrestling, volleyball, water polo, and cross-country skiing. The number of subjects was thirty-five.
3. The study was limited to determining whether the athlete perceives the audience as a factor influencing his performance in a competitive situation.

Limitations

1. The study was limited by the reliability and validity of the perceived social facilitation questionnaire.

Definition of Terms

Anxiety. A hypothetical construct characterized by subjective, consciously perceived feelings of apprehension and tension, accompanied by or associated with activation or arousal of the autonomic nervous system.

Audience. Spectators observing an activity.

Audience Effects. The influence of observers on performance and behavior when they occur in the presence of passive spectators.

Coaction Effects. The influence on behavior that occurs as a result of the presence of other individuals who are engaged in the same activity.

Learning. The acquisition of new responses through repetitive practice over a period of time.

Performance. The emission of well-learned or over-learned

responses.

Social Facilitation. The consequences upon behavior which derive from the presence of other individuals. These consequences may have positive or negative effects on performance.

State Anxiety. A transitory state characterized by subjective feelings of apprehension or anxious expectation.

Trait Anxiety. A relatively stable personality trait which reflects individual differences in anxiety proneness.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

In recent years considerable progress has been made towards understanding the complex phenomenon termed social facilitation. A great deal of the credit for this success may be attributed to the work of R. B. Zajonc (1965) who has proposed a definition for the term and has attempted to explain the phenomenon on the basis of his "Drive Theory of Social Facilitation". The lack of a theory and definition has represented two critical problems which limited the value of research on this topic. However, Zajonc's (1965) work has provided the guideposts necessary for further research.

However, two other problems confronting research in this area have been dealt with less successfully. The first of these is the wide variety of subject types used in the studies reported. Subjects have included human beings, as well as various types of animals and insects. The question raised by this research is, how much, if any, of the findings of animal or insect studies is applicable to human beings? Fortunately, the review of literature in this chapter appears to provide an answer to this question.

A second problem deals with the exclusive use of the

controlled laboratory setting for social facilitation research. The advantage of this type of research is that it allows for the strict control of all variables and the accurate measurement of performance changes. However, are the conclusions drawn from the artificial situation applicable to the field situation? One must seriously question the value of the exclusive use of the controlled laboratory study, particularily for physical education. It was for this reason that the present study was undertaken.

This brief introduction has been designed to orientate the reader to the type of literature to be reviewed in this chapter. Before beginning the examination of the literature a brief review of Zajonc's (1965) work will be conducted, as his work will serve as a guide to developing the literature in this area. The remainder of the chapter will deal with a general review of the research literature based on Zajonc's two experimental paradigms. For the purposes of organization and understanding each of these two sections will be further sub-divided into the research prior to 1965 (ie. the research studies on which Zajonc based his proposals) and the research reported after that date. The justification for developing the research in this manner is the differences in the direction of the studies prior to, and after, Zajonc's (1965) work. Whereas the early research had no theory to provide direction for research the studies after 1965 were primarily aimed at putting Zajonc's proposals and particularily his drive hypothesis

to the test. It is in this latter period of research that considerable progress in understanding social facilitation has been made.

Development of the Drive Theory of Social Facilitation

Social facilitation, as defined by Zajonc (1965, p. 269) refers to "the consequences upon behavior which derive from the sheer presence of other individuals." These consequences may have a positive or a negative effect upon performance. Research on this topic dates as far back as 1897 when Triplett, quite accidently, noticed that the presence of an observer improved the performance of competitors on a fishing reel winding task. Since that time numerous experiments have been performed with seemingly conflicting results. Although interest in this topic remained quite intense until the late 1930's, the coming of the Second World War brought this research to a standstill. Very little more was done until 1965 when Zajonc's proposals on social facilitation research sparked renewed interest in the problem.

Zajonc's (1965) proposals provided a very plausible explanation for the conflicting findings in social facilitation studies. Although many studies found that spectators facilitated performance, there seemed to be an equal number of studies which reported performance decrements. In an attempt to determine if there was any consistency in the research and also in the hope that the problem could be solved, Zajonc reviewed the relevant literature. As a

result of his critical analysis, he was able to propose a solution to the problem.

Zajonc (1965) found two basic experimental paradigms in social facilitation research. These were audience effects and coaction effects. Audience effects, Zajonc (1965, p. 269) defined as the effects of "observation on behavior when it occurs in the presence of passive spectators." On the other hand, coaction effects on behavior "occur in the presence of other individuals also engaged in the same activity" (Zajonc, 1965, p. 269). Zajonc (1965) found that although coaction effects were slightly more complex than audience effects, both had very similar effects on performance. According to Zajonc the key to understanding the conflicting results of the research was that performance was facilitated while learning was impaired in the presence of spectators. In other words, if the experimental task was one that the test subject had learned well previous to the actual testing, then spectators could be expected to facilitate his test performance. However, if the experimental task was a new task or one at which the individual had not yet achieved competence, then the presence of spectators would be expected to have a detrimental effect on his performance of the task.

Zajonc (1965) then applied his findings to drive theory and concluded that the emission of well learned responses is facilitated by the presence of spectators, while the acquisition of new responses is inhibited. As

this finding was characteristic of both audience and coaction effects, Zajonc (1965, p. 272) proposed the following major theoretical generalization for social facilitation:

> If the presence of others raises the probability of dominant responses and if strong (and many) incorrect response tendencies prevail, then the presence of others can only be detrimental to performance.

At this point, Zajonc (1965, p. 273) took his theorizing one step further and hypothesized that "the presence of others increases the individual's general arousal or drive level." The basis for this proposal was the emission of dominant responses. Zajonc (1965) had found that the presence of others, as spectators or as co-actors, enhances the emission of dominant responses. In addition research literature indicated that arousal and activation or drive all enhanced the emission of dominant responses. Therefore, although the evidence was very limited, Zajonc (1965) felt justified in hypothesizing a relationship between the presence of others and drive level.

Summary

1. There are two basic experimental paradigms in social facilitation research. These are audience effects and coaction effects.
2. Although coaction effects are slightly more complex than audience effects, both have very similar effects on performance.
3. Performance is facilitated while learning is impaired

in the presence of spectators.

4. The emission of well learned responses is facilitated by the presence of spectators, while the acquisition of new responses is inhibited.
5. The presence of others increases the individual's general arousal or drive level.

Audience Research Prior to 1965

In the period between Triplett's (1897) observations and Zajonc's (1965) work there were a number of interesting studies performed to determine the effect of spectators on performance. It was on the basis of these studies that Zajonc developed his conclusions with regard to audience. In order to develop a better understanding of the research a small number of these studies must be considered.

To begin with, Laird (1923) performed a study on fraternity pledges to determine the influence of razzing upon motor performance. Although there were many individual differences as to degree, it was clear that steadiness, coordination and fatique rate were all negatively affected, with steadiness undergoing the greatest change.

Gates (1924) reported that groups were slightly less efficient in front of an audience, and the more proficient individuals appeared to be affected to the greatest extent. Tests included: coordination, color naming, analogies, and naming words. These were performed in front of audiences of varying size, however, no reliable differences in the

effects of audience size were determined.

A study conducted by Travis (1925) had subjects perform an eye-hand coordination test alone and with a small passive audience. Although the task was learned prior to performance the results as reported were not significantly reliable. However, the audience condition did show that eighteen of twenty-two subjects did improve their performance in this condition. Travis, concluded that there were indications of superior eye-hand coordination among subjects tested in the social situation. It is interesting to note that Horne (1971) has reported that Travis's method of analysis was appropriate for independent rather than related measures. Proper use of statistics has shown that Travis's results were statistically significant.

Dashiell (1930) conducted a study to determine group effects on performance. Using multiplication by two place numbers, mixed relations or analogies and free serial word associations as tests, it was found that a passive audience had a facilitating effect on speed at the expense of accuracy.

A further study was performed by Pessin and Husband (1933) to determine the influence of spectators on individual learning behavior. Using a learning maze as their experimental task it was found that passive spectators had no statistically significant effect on learning. However, there was some suggestion that learning in the presence of spectators produced greater variability in performance.

Pessin (1933) reported that in a study to determine the relative effects of social and mechanical stimulation on learning and retention, it was found that learning was more efficient under quiet conditions than either mechanical or social stimulation conditions. However, more learning was retained under the latter two conditions than under the quiet control condition.

Finally, Singer (1965) reported a study comparing the effect of spectators presence on athletes and non-athletes performing a motor skill involving balance. Not only were non-athletes significantly better on two of three trials performed in front of spectators but they performed better throughout the ten practice trials.

Summary

1. Performance was facilitated while learning was impaired in the presence of spectators.
2. No reliable differences in the effects of audience size were determined.
3. Noise hinders learning efficiency.

Audience Research Since 1965

Since Zajonc's (1965) work numerous studies have been undertaken to test his conclusions with regard to audience effects. Studies supporting his findings have been reported by Cox (1966, 1968), Zajonc and Sales (1966), Matlin and Zajonc (1968), Zajonc, Heingartner and Herman (1969), Chevrette (1968), and Ganzer (1968). Studies

providing partial support for Zajonc's work are as follows: Cottrell, Rittle, and Wack (1967), Cottrell, Wack, Sekerak, and Rittle (1968), Henchy and Glass (1968), Martens (1969), and Quarter and Marcus (1971). A lone study which failed to provide support for Zajonc's work was reported by Singer (1970). A brief summary of these studies follows.

Cox (1966) used marble dropping as his task, to investigate the effects of presence and absence of spectators (passive and familiar) on the performance of second and third grade boys who differed in levels of test anxiety. The "alone" condition had the experimenter present. From this condition a variety of spectator conditions were introduced. Cox reported that the absence of spectators other than the experimenter resulted in response increments in high test anxious boys and response decrements in low test anxious boys. The presence of spectators in the other test conditions increased the response rate of low test anxious boys; while the test condition which had a familiar adult female observe the high test anxious boys resulted in a decrement in response rate for these boys.

In a second study, using the same task Cox (1968) investigated the effects of the presence or absence of fathers, male teachers, peers, and strange male adults on the performance of third and fourth grade elementary school boys, who differed in levels of test anxiety. This study had similar findings to Cox's earlier study (1966) in that low test anxious boys showed response increments when any

of these people entered and stayed in the experimental room. Presence of fathers or male teachers resulted in response decrements for high test anxious boys. However, when only the experimenter and the subject were present, low test anxious subjects showed response decrements, while high test anxious subjects showed response increments under these conditions.

Zajonc and Sales (1966) had subjects perform a pseudo-recognition task in which their guessing responses were based on dominant and subordinate habits, previously established by means of differential training. The purpose of the study was to examine the effects of an audience on the emission of dominant and subordinate responses. It was found that the probability of dominant responses was higher for subjects working in the presence of an audience than those working alone. With regard to subordinate responses, however, the opposite results were observed. These results were in agreement with Spence's (1956) drive theory effects, thus supporting Zajonc's theory.

In a similar study, to determine the effects of an audience on both dominance of the response and the latency of the response, using a word association test; Matlin and Zajonc (1968) hypothesized that the presence of an audience serves as a drive energizer, leading to increased probability of dominant responses and to a decreased latency of its emission. Findings of the study supported this hypothesis.

An experiment using cockroaches as subjects was reported by Zajonc, Heingartner, and Herman (1969). An attempt was made to test the drive theory of social facilitation by observing the maze and runway performance of cockroaches under social and solitary conditions. Results of the study found that under the "mere presence" of conspecifics maze performance was impaired while runway performance was facilitated.

Chevrette (1968) reported that peer group observation improved performance in a shuttle run. Positive effects were most pronounced in front of an audience of either mixed or the opposite sex. No significant differences were found on two other test items involving strength.

Cottrell, Rittle, and Wack (1967) found that an audience affects performance quality by increasing drive level. The task used was Spence's paired associate word lists. Results showed that there was a significant interaction between audience and list, such that the presence of an audience tended to improve performance on the non-competitional list and impair it on the competitional list. However, the authors reported that their findings were limited to individuals who were not highly proficient at paired-associates learning. They concluded a high level of ability neutralizes the facilitating and hindering effects of the pre-experimental associations on these lists; therefore the hypotheses didn't receive an adequate test with the highly proficient individuals.

In a follow-up study Cottrell, Wack, Sekerak, and Rittle attempted to evaluate Zajonc's proposal that the mere presence of other persons is responsible for audience effects (1968). The task employed was a pseudo-recognition task which placed previously established verbal habits in competition with each other. The three conditions used were alone, audience, and non-spectators. In the non-spectator condition the "merely present" could not see the task being performed. The findings of this unique study, were that the presence of an audience enhanced the emission of dominant responses, but the mere presence of others did not. Therefore, although drive effect holds for audience, there was no support for Zajonc's proposal that the "mere presence" of other persons was responsible for audience effects.

A study to test the evaluative element in a social situation and also to consider the arousal interpretation of social facilitation phenomena was reported by Henchy and Glass (1968). A pseudo-recognition task was performed by subjects in which their responses were based on habits of varying strengths established through prior training. Physiological data, measured by autonomic reactivity during task performance failed to support social facilitation theory. In addition, results indicated that the probability of dominant responses was higher for subjects who thought their performance was being evaluated, in contrast to those who worked either in the presence of a non-evaluating audience or alone. The opposite effect was observed for

subordinate responses. This study lends support to the findings of Cottrell et al (1968) and suggests that Cottrell et al (1968) made a major theoretical addition to Zajonc's work.

Ganzer (1968) performed a study to clarify the possible relationship of test anxiety to learning and performance in an experimental situation involving presence and absence of spectators and learning of nonsense syllables. On the first day, observed subjects learned less efficiently than did non-observed subjects. The presence of spectators was detrimental for high and middle anxious groups but not for the low anxious group. Observed subjects in the latter group tended to learn at a somewhat better rate during later trials than did the non-observed subjects.

Further support for social facilitation theory was reported by Martens (1969). Using a coincident timer as his task, Martens found results consistent with social facilitation theory when subjects learned and performed a complex task. However, anxiety and audience presence did not interact in a manner consistent with drive theory or other previous research. After initial learning, high anxiety subjects performed better than low anxiety subjects independent of the audience factor. However, a palmar sweat print provided evidence in support of the assumption that the presence of others is a source of arousal.

In order to test Zajonc's theory that the presence of an audience during a task (digit span test) causes an

increment in drive level and a concomittant impairment in performance, Quarter and Marcus (1971) performed an experiment using sixty-eight subjects, thirty-four from each extreme of an anxiety scale. The predicted audience affect was obtained and did reach significance, however, the interaction with drive level did not occur. The hypothesis that increased drive level was the mediating variable for the audience effect was re-examined. The authors hypothesized that affilitative anxiety rather than test anxiety was contributing to the drive increment. In substituting birth order for test anxiety as an independent variable, it was found that in the audience presence condition first borne did have poorer recall, while it was unrelated in the audience absent condition.

Singer (1970) has reported results of a study to determine the effects of spectator presence and absence at the early and later stages of skill acquisition which do not support Zajonc's theory of social facilitation. Using a star-tracing task subjects performed the task on two test occassions under various test conditions. It was found that the presence or absence of spectators had no noticeable effect on the initial learning phase as contrasted to later phases of performance. When conditions remained the same on both testings, less errors were made. Speed was generally quicker under altered task conditions.

Summary

1. Performance is facilitated while learning is impaired in

the presence of spectators.

2. Audience affects performance by increasing drive level.
3. Insect studies support Zajonc's proposal that the "mere presence" of others is responsible for audience effects.
4. Studies using human beings as subjects support Cottrell's "evaluation apprehension" explanation of audience effects.
5. Cottrell and al (1968) have made a major theoretical addition to Zajonc's work.
6. Although research has been reported which conflicts with the above conclusions, in general, these points have received considerable support.

Coaction Research Prior to 1965

To begin with, a number of the coaction studies previously reviewed by Zajonc (1965) will be examined. It will become quite apparent to the reader that there are a considerably greater number of studies using animals and insects in coaction research than were found in audience research. Therefore, the question of how much of human behavior can be determined from animal studies becomes more relevant.

One of the first major coaction studies was reported by Allport (1920). He performed a number of experiments to compare human mental processes when alone with human reactions to similar or equivalent stimuli, when a member of a "co-feeling" group. Tests used included free-chain associations, and subjects were told not to compete. Overt

comparisons between subjects was also prohibited. It was found that in a co-working situation the speed of the free association process was improved and more ideas were produced. However, the alone condition produced quality rather than quantity in ideas. Allport concluded that the particular results achieved depended on the nature of the experimental task, individual differences and other less important factors.

Dashiell (1930) in his study (mentioned earlier in this paper) to determine group effects on performance, reported that coaction effects were negligible. Tests included multiplication by two place numbers, analogies and free serial word associations. Rivalry was found to exert a greater effect on performance than either audience or coaction effects.

In a study employing the use of albino white rats Harlow (1932) found that social facilitation played a role in the feeding responses of a rat. Significantly more food was eaten in the social situation. An observation of rat behavior also indicated that a co-actor influenced behavior, in that rats when alone were less active.

Gates and Allee (1933) reported that cockroaches can be conditioned to run a maze when isolated, paired, or in groups of three. In the isolated condition cockroaches could be conditioned in less time and with fewer errors per trial than in the other two conditions. However, errors and activity per minute were less in pairs and triads. There

was no retention of maze learning from day to day.

A study on social facilitation of the common black ant was performed by Chen (1937). In order to determine the general relations between the individuals in a society, nest building activities were studied in isolation and together. It was found that reaction time (time taken to begin work) was shorter when ants had co-workers than when in isolation. It was also found that co-working ants accomplished more work with greater uniformity. The number of co-workers did not influence performance.

Gurnee (1939) reported a study to determine the effects of collective learning on individual participants. Two learning situations were used, one employing a maze and the other verbal material. While one group learned alone, with the experimentalist present, the other group learned in a group situation of from nine to fourteen members. Group performance was superior on both test items. Gurnee explained this by suggesting that the group had profited by suggestions from their fellows, and that the fixation of their correct responses and elimination of their errors was reinforced by the social factor.

A study was reported by Abel (1939) to determine the role played by intelligence levels on social facilitation. Subjects were female of two subnormal intelligence levels. The test task was a pencil and paper maze performed either alone or in pairs. Coacting subjects performed better and social facilitation effects were greatest, on the subjects

of higher intelligence. It was also concluded that the effects of social facilitation decreased as the subject became more experienced with the task.

Seidman, Benson, and Miller (1957) investigated the affect of one person's presence on another person's ability to endure the stress of an electric shock. Subjects were tested alone and then again in the presence of a partner who the subject believed was also receiving the shock (co-actor). It was found that the presence of a partner acted to raise the subject's tolerance level for electric shock significantly beyond that when the subject was alone. Two alternative explanations were offered by the authors. Either the partner produces competitive behavior in the subject or the partner provides re-assurance to the subject on his ability to tolerate stress.

Bergum and Lehr (1963) have reported a study to determine the effect of pairing of observers upon individual monitoring performances of a circular light display. Overall performance was not facilitated from pairing, however, there was a significant relationship between performance of the members of the pairs. It was hypothesized that the degree of conversation between members might account for the effects.

The effect of emotional arousal on a worker's performance of a well-learned task compared to an initial task was the purpose of a study by Latane and Arrowood (1962). The task consisted of pressing switches in a simple

repetitive sequence. Subjects were trained and then aroused. A new task was then given after the first task was completed. Experimental groups differed on a tenseness scale and there was a statistically significant difference between groups. Although emotional arousal didn't affect the first task, new task performance was inhibited for both the experimental and control groups.

Summary

1. Performance is facilitated while learning is inhibited in the presence of coactors.
2. Rivalry exerts a greater effect on performance than either audience or coaction effects.
3. Social facilitation effects are greatest on subjects of higher intelligence.
4. Emotional arousal inhibits the learning of a motor task.

Coaction Research Since 1965

Since Zajonc's (1965) work numerous studies have been undertaken to test his conclusions with regard to coaction effects. The following studies have found support for his social facilitation theory: Zajonc, Heingartner, and Herman (1969), Martens and Landers (1969), Zentall and Levine (1972), and Burwitz and Newell (1972). Partial support for Zajonc's theory has been provided by Martens and Landers (1972) and Klinger (1969). Studies reported which were unable to find results supporting Zajonc's view of social facilitation include studies by Evans (1966, 1968),

Wankel (1971), and Thayer and Moore (1972).

Zajonc, Heingartner, and Herman (1969), observed the maze and runway performance of cockroaches under solitary and social conditions, in an attempt to test the drive theory of social facilitation. Maze performance was impaired in the coaction situation, while runway performance was facilitated when compared to the performance of subjects in solitary conditions.

An experiment to determine the effects of one and three coactors on an individual's performance of a muscular endurance task was performed by Martens and Landers (1969). Subjects extended the dominant leg in a horizontal position for as long as possible under one of three conditions, alone, in pairs, or in groups of fours. Individuals in quadrads performed significantly better than individuals in dyads and alone. However, no significant differences were found between individuals performing alone or in dyads, although the dyads did perform better.

Martens and Landers (1972) have reported a second study to test the hypothesis that increasing number of coactors result in increasing impairment in motor performance. In addition they attempted to determine what component(s) of the coaction situation produced the social facilitation phenomenon. The motor task used was a "ball roll up" game which a pilot study had shown resulted in learning continuing for over fifty trials. The results of the experiment provided support for the hypothesis that increasing numbers

of coactors results in increasing impairment of performance in a learning situation. However, the results did not provide support for Zajonc's "mere presence of others", as the source of social facilitation phenomena. Rather, support was provided for Cottrell's (1968) hypothesis, that "evaluation apprehension" was the component of the coaction situation producing social facilitation phenomenon. Once again the performance of dyads, although worse than the alone condition was not significantly different.

A further study investigating coaction effects on performance was reported by Klinger (1969). The test in this study was a vigilance task and the findings were similar to Martens and Landers (1969, 1972) in that performance was improved by the presence of a coactor but only when the coactor had access to information about the quality of the subject's performance. These studies provide partial support for Zajonc in that dominant responses are influencing performance, whether they facilitate or inhibit, but they are rejecting Zajonc's "mere presence" idea, in favor of Cottrell's evaluation apprehension, as the reason for the coaction effect.

Zentall and Levine (1972) reported an experiment to separate the relative contributions of observational learning and social facilitation to acquisition of bar-press response by rats. Results of this study suggest rats can learn by immitation, however, it was also found that the mere presence of a coactor can also inhibit learning. This is consistent

with social facilitation theory as proposed by Zajonc.

Finally, Burwitz and Newell (1972) have reported a study which provides support for Zajonc's "mere presence" idea while rejecting Cottrell's "evaluation apprehension" phenomena. The study was based on the findings of Cottrell (1968) and Klinger (1969) and designed to determine the effects of the mere presence of one or three coactors on the acquisition of a novel motor skill. The task used was very similar to the "ball roll up" game used by Martens and Landers (1972). In no condition could subjects evaluate their co-actors performance; however, the performance of tetrads was significantly inferior to that of subjects alone or in dyads.

There have been a small number of studies reported that have not found evidence which supports Zajonc's view of social facilitation. To begin with, Evans (1966) reported a study to explore the differences between social and non-social competition and to investigate the possible relationship between performance, the level of motivation and cognitive activity. Subjects performed a reaction time task. Only minimal differences were found between social and non-social competition and no information was obtained regarding the possible relationship between performance, the level of motivation, and cognitive activity.

In a second study Evans (1968) attempted to determine between the motivational factors of rivalry and social facilitation in a competitive situation (coaction).

Although heart rate supported rivalry as a motivational component, there was only a suggestion that social facilitation was a component.

Wankel (1971) performed a study to analyze the competitive (coaction) situation into separate motivational components and to investigate their influence on the performance of a motor task. The three components investigated were rivalry, coaction, and audience. Although rivalry was found to be a motivational component in a competitive situation, little supportive evidence for the existence of the hypothesized coaction and audience motivational components was found. In addition, no relationship between performance, level of arousal, and cognitive alertness was demonstrated.

Thayer and Moore (1972) have reported a comparison of activation reports and anonymous performances of coacting groups with the reports and performances of lone subjects. The study was an attempt to provide clarifying information on the interaction of anxiety and group variables. Through the use of AD ACL, as well as performance measures, the dimensionality of activation states underlying social facilitation was investigated. The paired associate functioning was found not to change as a function of group interaction, thus suggesting a possible revision of social facilitation theory concerning groups. In addition, changes in activation within a group may be dependent on the anxiety condition within the group. Evidence, for at least, a two dimensional

view of activation was also reported.

Summary

1. Performance is facilitated while learning is inhibited in the presence of coactors.
2. Increasing the number of coactors results in increasing the facilitation of performance and increasing the impairment of learning.
3. Animal and insect studies support Zajonc's "mere presence" explanation of coaction effects.
4. Coaction studies on human beings tend to support Cottrell's "evaluation apprehension" explanation of coaction effects.
5. A small amount of research has been reported on human subjects which fails to support Zajonc or Cottrell's points of view.

Direction of Future Research

Upon concluding the review of literature one must consider the direction of future research. One particular article (Weiss and Miller, 1971), worthy of note, has maintained that the scope and power of the drive theory of social facilitation could be extended by taking fuller advantage of the learning theory models of drive. Weiss et al (1971) further maintain, that Cottrell's (1968) "evaluation apprehension" interpretation of social facilitation is not only valid but a necessary addition to Zajonc's (1965) original proposal. The existing theory, according

to Weiss et al (1971), employs the "irrelevant drive paradigm" in which neither the initiation nor the termination of audience presence is contigent on the behavior of the subject or the onset of the conditioned stimulus. A further extension of this paradigm would encompass audience induced drive based on the model of learned drive. Based on this assumption research could be directed towards testing the application of a learning model towards varying strengths of audience induced drive. Applicable would be learning phenomena such as extinction, summation, and reinforcement.

However, although research is gradually mounting in favor of Cottrell's findings, there are still conflicting reports (Zentall et al, 1972) and therefore research could be produced to resolve this contradiction. Of particular interest and need, in the area of sport and physical education, is research directed towards determining the attitudes and feelings of athletes with regard to social facilitation phenomena. Indeed, by enlarging our view of the problem one may acquire greater insight towards resolving this complex issue.

CHAPTER III

METHODS AND PROCEDURE

The Subjects

The thirty-five subjects used in this study were male athletes from Edmonton, Alberta. Their ages ranged from seventeen to thirty-five years, the mean age being 19.6 years.

The athletes were utilized as subjects for two main reasons. The first consideration was the suitability of the team for which the subject performed. An integral part of the study was the selection of athletic teams which competed in a specific social situation. These were as follows: wrestling (individual-spectators), volleyball (coaction-spectators), cross-country skiing (individual-non-spectator), and water polo (coaction-non-spectator). A second consideration was the availability of the teams for the study. The athletic teams involved in the study were the University of Alberta's varsity wrestling, volleyball and cross-country ski teams, and a water polo team from the Edmonton Junior Water Polo League. The permission of the coaches involved was received and the athletes voluntarily made themselves available for testing.

Only males were utilized in the study, as a study by Strong (1963) had shown that social facilitation effects

differ between males and females in a competitive situation.

Experimental Design

The experimental design was a four by three cell design, set up so that the results could be treated by a two-way analysis of variance. The two independent variables were four varsity athletic teams and three self-report questionnaires. Table I presents a diagramatical description of the design.

TABLE I

EXPERIMENTAL DESIGN *

The row means permit a comparison of group means, and the column means a comparison of scales.

	Scale 1	Scale 2	Scale 3
Wrestlers	. . .	. . .	. . .
Volleyball Players	. . .	. . .	. . .
Cross-Country Skiers	. . .	. . .	. . .
Water Polo Players	. . .	. . .	. . .

*Means for Trait Anxiety (scale 1), State Anxiety (scale 2), and Perceived Social Facilitation (scale 3). Each Cell Entry is the Mean of the Scores of the Subjects on that Team.

Instruments

The State-Trait Anxiety Inventory was developed by C. D. Spielberger and consists of two sub-scales, a state anxiety scale, and a trait anxiety scale. The state anxiety scale consists of twenty statements that ask people to indicate how they feel at a "particular moment in time." The trait anxiety scale also consists of twenty statements, which ask people to describe how they "generally" feel. The two scales differ in that the state anxiety scale provides a measure of an individual's momentary feelings of tension, nervousness, worry, and apprehension. However, the trait anxiety scale provides a measure of an individual's general anxiety proneness. This is a more or less stable personality trait. The use of the State-Trait Anxiety Inventory in research allows the researcher to study changes in an individual's anxiety level induced by certain experimental procedures or situations. C. D. Spielberger (1970) has demonstrated this inventory to have both reliability and validity.

The second instrument to be used in the study was designed to measure social facilitation effects as perceived by the athlete and was developed by the author. This instrument consists of twenty statements which ask the athlete to describe how he "generally" perceives certain social situations during competition. The scale provides a measure of the athlete's awareness of his coactors and the audience. In order to insure the reliability and validity of this

instrument a number of appropriate steps were taken in developing the inventory.

To begin with, a pool of twenty-seven questions was developed by the author and examined by three judges. Following this, a pilot study was undertaken using the twenty-seven question inventory. The subjects for the study were varsity hockey and basketball players in the Canada West Intercollegiate Athletic Conference. To insure an adequate return of questionnaires the University of Manitoba's varsity hockey and basketball teams were also included in the pilot study.

In order to insure the completion and return of the questionnaires a letter was sent to each coach explaining the purpose of the research and requesting his cooperation. From an expected possible return of approximately one hundred and forty, eighty-eight (63%) of the questionnaires were returned completed.

The data from the eighty-eight questionnaires was statistically analyzed. To begin with, a Kuder-Richardson (KR-20) reliability coefficient of .797 was found. The KR-20 (Ferguson, p. 368) demonstrates the high internal consistency of the inventory. An item analysis ($\alpha = .01$, 86 d.f.) was also performed on the data. As a result, four questions were discarded on the basis of low correlations. The remaining twenty-three questions correlated quite highly. In order to limit the inventory to twenty questions the three questions of lowest correlation were dropped from the

inventory.

Procedure

The thirty-five subjects were tested twice on both the trait anxiety and perceived social facilitation questionnaires. Approximately three weeks separated the administration of the first and second testings. In addition, with the exception of the cross-country ski team, four measures on the state anxiety questionnaire were obtained. As a result of a limited number of meets and meet cancellations only three state anxiety measures for the cross-country ski team were obtained. The state anxiety questionnaire was administered approximately one hour prior to competition on each different occasion. Finally, each coach was asked to make a subjective evaluation of each athlete's performance. The performance evaluation was a ranking of the team members by the coach from best to poorest, in relation to how they had performed compared to their teammates.

Data Analysis

The administration of the trait anxiety and perceived social facilitation questionnaires allowed a test-retest reliability check of these instruments to be performed. Following this a two-way analysis of variance (Anova 25) was performed on the raw data. The level of significance was set at .10 as suggested by Scheffé (1959, p. 71). The Scheffé multiple comparison procedure in the Anova 25 program provided only main effects. One-way analyses of

variance between the groups and between the scales were then performed using the DERS Anova 11 program. The Scheffé multiple comparison procedure was then used to determine where the significant differences occurred. The possible implications of the coach's evaluation of performance and the individual's self-evaluation of performance were also examined.

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

The four experimental groups in this study were selected on the assumption that each group competed in a specific social situation. These were as follows: wrestling (individual-spectator), volleyball (coaction-spectator), cross-country skiing (individual-non-spectator), and water polo (coaction-non-spectator).

The data collected consisted of the scores for each subject on three self-report questionnaires (as in Appendix A). The three questionnaires provided scores for each subject on state anxiety, trait anxiety, and perceived social facilitation. The gathering of two measures on both the trait anxiety and social facilitation scales allowed a test-retest reliability check of these two instruments to be made. Four state anxiety measures obtained immediately prior to competition, provided an average pre-competition anxiety level for each subject. In addition, each coach ranked his athletes' overall performances, from best to poorest as compared to their teammates, during the test period.

The analysis of data consisted of the following procedures. First a test-retest reliability check of the trait anxiety and perceived social facilitation scores was

made to determine if these scales were reliable (1971, p. 365). The result of this check revealed a high correlation for both scales, thus confirming their reliability (as in Appendix B).

A two-way analysis of variance using a DERS computer package (Anova 25) was then performed on the data. The following information was output by the program: (a) a cell matrix IA x JB, (b) a test for additivity, ie. to test whether interaction is significant, (c) an Anova Table under the least square model, (d) a Scheffé multiple comparison of main effects under the least square model, (e) a homogenity of variance test using Bartlett's method, and (f) cell means and variances. Table summaries of the two-way analyses data were presented.

The Scheffé multiple comparison in the Anova 25 program dealt only with main effects, therefore, it was necessary to perform one-way analyses of variances on the data to determine which rows and columns contained significant differences. A second DERS program (Anova 11) was used for this purpose. The Scheffé multiple comparison procedure was then used to determine which means were significantly different. Table summaries of the one-way analyses data were presented.

Finally, a T-test was performed to determine if athletes ranked as the best performers differed from athletes ranked as the poorest performers on any of the three scales. The raw scores of the top two ranked athletes of each group

(best performers) were collected and compared to the scores of the bottom two ranked athletes of each group (poorest performers) on each of the three scales.

I. RESULTS

Instrument Reliability Check

A summary of the test-retest reliability check with the correlation coefficient expressed in terms of raw scores is shown in Table II.

TABLE II

SUMMARY OF TEST-RETEST RELIABILITY CHECK

	Sum X	Sum Y	Sum X^2	Sum Y^2	Sum XY	r
Trait Anxiety	1199	1215	43,173	44,143	43,241	.818
Perceived Social Facilitation	1346	1353	53,828	54,163	53,737	.869

The high correlation coefficients found in Table II demonstrate the reliability of the trait anxiety and perceived social facilitation questionnaires.

Data Analysis

A two-way analysis of variance using a DERS computer package (Anova 25) was performed on the data. The information output by the program is summarized in Tables III-VI. Table III provides a cell means matrix expressed in terms

of raw scores, while Table IV presents a cell variance matrix. Bartlett's homogeneity of variance test using the data in Table IV produced a chi square of 5.3. At the .05 level of significance with 3 degrees of freedom a chi square of 7.82 or larger is required for the level of significance to be reached. Therefore, the assumption that the variances of the experimental groups are equal (homogeneous) must be accepted.

TABLE III

CELL MEANS MATRIX

	State Anxiety	Trait Anxiety	Perceived Social Facilitation
Wrestling	46.875	34.100	40.200
Volleyball	36.305	32.888	36.555
Water Polo	42.873	37.583	39.083
Cross-Country Skiing	43.525	27.750	36.500

TABLE IV

CELL VARIANCE MATRIX

	State Anxiety	Trait Anxiety	Perceived Social Facilitation
Wrestling	66.586	68.767	64.845
Volleyball	35.123	26.861	67.029
Water Polo	76.235	73.902	71.720
Cross-Country Skiing	113.040	44.250	24.333

Further information from the Anova 25 output is summarized in Tables V and VI. Table V summarizes the test for additivity (interaction). The results of this test reveals that there are no interaction effects between the two independent variables. Table VI presents a summary of the two-way analysis of variance of the raw scores between the two independent variables. The summary reveals that significant differences exist between the four experimental groups and between the three scales. However, the Scheffé multiple comparison procedure in the Anova 25 package deals only with main effects. Therefore further analysis of the data was required to determine precisely where the significant differences occurred.

TABLE V

SUMMARY OF THE TEST FOR ADDITIVITY

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
SAB	408.625	6.	68.1042	1.088390
SE	5819.31	93.	62.5732	

$p > .25$

TABLE VI

SUMMARY OF THE TWO-WAY ANALYSIS OF VARIANCE

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
SA	535.685	3.	178.562	2.838*
SB	1161.38	2.	580.692	9.230**
SE	6227.94	99.	62.908	

*$p < .01$

**$p < .001$

Tables VII, IX, and X present summaries of the one-way analyses of variances (Anova 11) between the four experimental groups on each of the three scales. Of the three one-way analyses of variance only the one-way analysis of variance of the state anxiety scores (Table VII), found that significant differences existed between the experimental groups. A Scheffé multiple comparison (Ferguson, 1971, p. 270) of the state anxiety group means revealed that wrestlers had significantly higher anxiety levels than volleyball players immediately prior to competition (Table VIII).

TABLE VII

SUMMARY OF THE ONE-WAY ANALYSIS OF VARIANCE OF STATE ANXIETY SCORES BETWEEN THE FOUR GROUPS

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
Between groups	542.300	3.	180.766	2.72*
Within groups	2057.96	31.	66.386	

*p < .10

TABLE VIII

SCHEFFÉ MULTIPLE COMPARISON OF GROUP STATE ANXIETY MEANS

Comparison	F
Wrestling, Volleyball	7.9704*
Wrestling, Water Polo	1.3
Wrestling, Cross-Country Skiing	.4829
Volleyball, Water Polo	3.3409
Volleyball, Cross-Country Skiing	2.1738
Water Polo, Cross-Country Skiing	.019

*p < .10

TABLE IX

SUMMARY OF THE ONE-WAY ANALYSIS OF VARIANCE OF THE TRAIT ANXIETY SCORES BETWEEN THE FOUR GROUPS

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
Between groups	319.226	3.	106.408	1.85
Within groups	1779.46	31.	57.401	

TABLE X

SUMMARY OF THE ONE-WAY ANALYSIS OF VARIANCE OF THE PERCEIVED SOCIAL FACILITATION SCORES BETWEEN THE FOUR GROUPS

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
Between groups	82.945	3.	276.484	0.43
Within groups	1981.74	31.	63.927	

Tables XI, XIII, XIV, and XV present summaries of the one-way analyses of variances of each experimental group between the three scales. Although the volleyball and water polo analyses failed to find significant differences between the scores on the three scales, the wrestling (Table XI) and cross-country skiing (Table XV) analyses demonstrated that significant differences did exist for both of these groups. A Scheffé multiple comparison of wrestling (Table XII) and cross-country skiing (Table XVI) scores showed that both groups scored significantly different

between each of the three scales.

TABLE XI

SUMMARY OF THE ONE-WAY ANALYSIS OF VARIANCE OF WRESTLING SCORES BETWEEN THE THREE SCALES

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
Between scales	816.554	2.	408.277	6.12*
Within scales	1801.17	27.	66.732	

*p < .01

TABLE XII

SUMMARY OF THE SCHEFFÉ MULTIPLE COMPARISON OF WRESTLING SCORES BETWEEN SCALES

Comparison	F
Social Facilitation, Trait Anxiety	9.7582*
State Anxiety, Trait Anxiety	42.7988***
Social Facilitation, State Anxiety	11.6845**

*p < .05

**p < .01

***p < .001

TABLE XIII

SUMMARY OF THE ONE-WAY ANALYSIS OF VARIANCE OF VOLLEYBALL SCORES BETWEEN THE THREE SCALES

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
Between scales	75.539	2.	37.769	0.88
Within scales	1032.08	24.	43.003	

TABLE XIV

SUMMARY OF THE ONE-WAY ANALYSIS OF VARIANCE OF WATER POLO SCORES BETWEEN THE THREE SCALES

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
Between scales	178.390	2.	89.195	1.21
Within scales	2440.42	33.	73.952	

TABLE XV

SUMMARY OF THE ONE-WAY ANALYSIS OF VARIANCE OF CROSS-COUNTRY SKI SCORES BETWEEN THE THREE SCALES

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
Between scales	499.695	2.	249.847	4.13*
Within scales	544.875	9.	60.541	

*$p < .10$

TABLE XVI

SUMMARY OF THE SCHEFFÉ MULTIPLE COMPARISON OF CROSS-COUNTRY SKI SCORES BETWEEN THE THREE SCALES

Comparison	F
Social Facilitation, Trait Anxiety	22.1317**
State Anxiety, Trait Anxiety	71.9436***
Social Facilitation, State Anxiety	14.2656*

*$p < .05$

**$p < .005$

***$p < .001$

Table XVII provides a summary of the T-test comparing the raw scores of the best performers to those of the poorest performers on each of the three scales. No significant differences were revealed by the comparison of the scores of these two groups.

TABLE XVII

SUMMARY OF THE T-TEST BETWEEN BEST AND POOREST PERFORMERS

	Sum X	Sum Y	Sum X^2	Sum Y^2
State Anxiety	330.21	329.80	14186.39	14029.26
Trait Anxiety	256	250	8366.	8104.
Perceived Social Facilitation	313.	314.	12581.	12806.

	Sum XY	r	t
State Anxiety	13367.61	-.49	1.37
Trait Anxiety	8065.	.34	.88
Perceived Social Facilitation	12358.	.18	.44

II. DISCUSSION

Test-Retest Reliability

The author's development of the Perceived Social Facilitation Questionnaire and a lack of research using Spielberger's State and Trait Anxiety Inventory in a competitive athletic situation, made the test-retest reliability check an important preliminary part of the study. Although the pilot study on the Perceived Social Facilitation Questionnaire had revealed an internal consistency reliability measure (Kuder-Richardson) of KR20 = .796, the additional support provided by the high test-retest reliability measure (r = .869) provides the author with a stronger base of

support from which to draw conclusions.

The high test-retest reliability measure (r = .818) found for the Trait Anxiety Inventory provides additional support for the findings of Spielberger (1970) who has already demonstrated the scale's reliability on individuals other than competitive athletes. A test-retest reliability measure for the State Anxiety Inventory was not computed because by Spielberger's own definition the state anxiety score is situation dependent. For this reason the reliability may be high or low depending on how similar two situations are to one another. In the present study in order to obtain an accurate state anxiety score for an individual, the average of four pre-competition state anxiety scores for each subject was taken (with the exception of the skiers, where three measures were averaged). This score was then taken to represent the individual's pre-competition anxiety level.

Perceived Social Facilitation

The failure to find significant differences between the four experimental groups on the perceived social facilitation questionnaire may be explained in any one of the following ways. To begin with, although a great deal of work was put into developing the questionnaire it still may not be a valid or sensitive enough device to measure the athletes' perceptions. If one rejects this explanation then it may well be that the different experimental groups do not

participate in a specific social situation. However, in terms of relative numbers of spectators it appeared to the author that this situation did in fact exist. If one rejects both of these explanations for the results found using this questionnaire, then it can only be concluded that Cottrell's (1967, pp. 91-110) evaluation apprehension hypothesis is not a valid explanation of social facilitation effects.

Although studies by Cottrell, Wack, Sekerek, and Rittle (1968), Henchy and Glass (1968), Klinger (1969), Martens and Landers (1972) have found support for Cottrell's hypothesis, a number of studies (Zajonc, Heingartner, and Herman, 1969; Burwitz and Newell, 1972; Zentall and Levine, 1972) have failed to provide support for Cottrell. Instead these studies support Zajonc's (1965) idea that the observers need be "merely present" not necessarily "evaluating" to produce social facilitation effects.

If, as suggested by Cottrell, the individual's performance is influenced by the observer's evaluating his performance, it can only be expected that significant differences should exist between the experimental groups on this questionnaire. That is, athletes in the spectator-present competition (wrestling, volleyball) should be more aware that their performance is being evaluated (thus, score higher on the perceived social facilitation scale) than the non-spectator competition (cross-country skiing, water polo) athletes, who have relatively no one to evaluate their performance.

The absence of any significant differences between the experimental groups on the perceived social facilitation questionnaire results in the acceptance of the first three null hypotheses (a, b, c) which had stated that significant differences between the groups on this questionnaire did not exist. These findings strongly suggest that Cottrell's evaluation apprehension hypothesis for social facilitation effects requires further examination.

State Anxiety Inventory

The analyses of the state anxiety scores found a significant difference between wrestlers and volleyball players. This result dictated the rejection of null hypothesis "e" which had stated that no significant differences in state anxiety would exist between the wrestling and volleyball scores. However, null hypotheses "d" and "f" were confirmed as no further significant differences between the experimental groups on this questionnaire were found.

The lack of further significant differences between the experimental groups and in particular between the "spectator" and "non-spectator" groups presents a further rebuff to Cottrell's evaluation apprehension hypothesis. According to his hypothesis it would be expected that the presence of evaluating observers would raise the state anxiety levels of the observed groups, thus creating significant differences between the spectator and non-spectator groups. This, however, did not occur.

The only significant differences in state anxiety occurred between the individual-spectator (wrestling) group and the coaction-spectator (volleyball) group. The basic difference between these two groups is that one (wrestling) participates in an individual-contact activity, while the second (volleyball) is a coaction-non-contact activity. However, neither the individual versus coaction nor the contact versus non-contact aspects of these activities by themselves adequately explain the resulting difference between them. If they did, then cross-country skiing (individual-non-contact) and water polo (coaction-contact) would also be significantly different. It appears that it is the unique combination of both an individual and a contact activity which results in higher state anxiety scores for wrestlers. Volleyball on the other hand produces the least stressful situation for the individual being both non-contact and coactive. According to this explanation cross-country skiing and water polo would produce similar stress producing situations as follows: Cross-country skiing is an individual activity (stress-increasing), but is non-contact (stress-decreasing), while water polo is a contact activity (stress increasing), but also coactive (stress-decreasing). In fact, the state anxiety scores of skiing and water polo were very similar and fell between the extremes of wrestling and volleyball.

If the differences between the groups are explained in the above manner, the influence of evaluating observers

upon state anxiety scores is minimal, while the amount of contact and whether the activity is coactive or individual are key variables in determining the individual competitor's anxiety level prior to competition.

Trait Anxiety Inventory

The trait anxiety scores failed to indicate any significant differences between the groups. No hypotheses had been made with regard to these scores and therefore no conclusions need be made. Although it has often been suggested that individuals select certain activities to participate in because of the tension these activities provide, there is no evidence to support this idea from the four experimental groups in this study. However, the lack of differences between the experimental groups may be explained on the basis of a number of similarities between the athletes involved.

To begin with, the athletes were similar in age, sex, education, experience, and the skill level attained in each activity. In order to reach the level of competition at which these athletes were performing each athlete would have experienced a number of years of competitive athletics. However, sport in our society has often been accused of eliminating individuals if they demonstrate any tendency to act or behave differently from what is socially acceptable. On this basis it could be argued that individuals with extreme trait anxiety scores would in all likelihood be

eliminated from competitive sport before they had reached the level of the athletes involved in this study. As a result it cannot be determined if athletes who have been eliminated would prefer one activity to another. Therefore, the athletes remaining in the experimental groups are similar in personality madeup and the trait anxiety scores succeed in demonstrating this fact.

Furthermore, the basic assumption of the study was that each group performed in a specific social situation, however, scores on the perceived social facilitation questionnaire failed to support this assumption. Therefore, competition for all groups took place in a similar social atmosphere and this factor must be considered as another variable common to all four experimental groups. Based on these commonalities between the groups, it is not surprising that no significant differences on the trait anxiety inventory were found.

An Analysis of the Scores Between the Scales

The analysis of variance between the scales for each of the four experimental groups found that only wrestling and cross-country skiing had significant differences. The Scheffé multiple comparison showed that these differences occurred between all three scales in both groups.

Although no relationship was hypothesized between anxiety scores and perceived social facilitation scores, one of the purposes of this study was to determine if any such

relationship did exist. Based on Cottrell's evaluation apprehension hypothesis one would expect that the group scoring high on perceived social facilitation would also score high on state anxiety.

In addition, it was hypothesized that significant differences between the state and trait anxiety scales would occur in the two groups performing in the spectator-present situation. The explanation for this was that all trait anxiety measures were taken in the non-spectator situation whereas the competitive situation was made more stressful (increasing anxiety) for two of the groups (wrestling and volleyball) because of the presence of "evaluating" observers.

In the case of the wrestlers and cross-country skiers both groups scored highest on the state anxiety scale and lowest on the trait anxiety scale. The wrestlers, as expected, scored higher on perceived social facilitation and state anxiety than the other three groups, however, the skiers, although scoring second highest to the wrestlers on state anxiety were lowest of the four groups on perceived social facilitation. Based on this data the greatest contributor to a high state anxiety score is individual competition. In addition, the low perceived social facilitation score of the cross-country skiers indicates the relative unimportance of spectators in raising anxiety levels of athletes. The low score also indicates to the author the accurateness of the scale in that cross-country skiing was

the most difficult of the four experimental groups for anyone to observe.

On the basis of the data discussed above null hypothesis "g" which stated that there would be no difference between the state and trait anxiety scores of the individual-spectator (wrestlers) athletes was rejected. However, the failure to find significant differences between the state and trait scores of the coaction-spectator (volleyball) athletes resulted in accepting null hypothesis "h" which had predicted no differences would exist.

An Analysis of the Scores of the Best and Poorest Performers

T-tests were performed on each of the three scales between the performers ranked best and poorest. However, no significant differences resulted. A possible explanation for the lack of differences may be that the differences in performance at this level of competition are more dependent on superior motor or skill ability than lack of experience in the competitive aspects of the activity. Similar trait anxiety scores between the groups suggest that individuals of anxiety extremes have been eliminated or eliminated themselves prior to reaching this level of competition. Similar perceived social facilitation scores and state anxiety scores suggest that at this level of competition the athletes' background or experience in the activity are relatively similar and as a result they perceive and are able to handle the stress of a competitive situation.

Differences in performance therefore can only reflect differences in motor or skill ability.

Weaknesses of the Study

Two readily apparent weaknesses of the study were the unequal numbers of subjects in the experimental groups and the small number of subjects on the cross-country ski team. As demonstrated by the Anova 25 analysis of data the unequal numbers of subjects in the experimental groups did not complicate the statistical analysis of the data as the variances of the four groups were homogeneous. On the other hand, the small ski team had a negative effect on the study in two ways. First, they provided a very small sample of the skiing population from which to draw conclusions and secondly, the large difference in numbers of subjects on the ski team as compared to the other three experimental groups prevented the random exclusion of subjects from each group to produce groups of equal size. It is indeed unfortunate that in a field study these weaknesses could not be controlled to a larger extent or possibly eliminated. However, to do this would require close cooperation from the experimental teams and coaches involved.

A third possible weakness of the study may be the validity of the instrument used to measure perceived social facilitation. Although the instrument has demonstrated reliability and numerous precautions were taken to assure its validity (as described in the methodology) it may well

be that a much more sensitive device is required.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

The primary purpose of the study was to determine if there are significant differences in perceived social facilitation effects between athletes of selected physical activities. A secondary purpose of the study was to develop a scale to measure these effects. The study sample was limited to thirty-five male athletes participating on a team involved in one of four competitive sports. An integral part of the study was the selection of four sport activities which competed in a specific social situation. These were as follows: wrestling (individual-spectator), volleyball (coaction-spectator), cross-country skiing (individual-non-spectator) and water polo (coaction-non-spectator).

In addition to the Perceived Social Facilitation Questionnaire, Spielberger's State and Trait Anxiety Inventory was also administered to the thirty-five subjects. The Perceived Social Facilitation Questionnaire and the Trait Anxiety Inventory were administered on two occasions allowing a test-retest reliability check of these instruments to be made. The State Anxiety Inventory was administered prior to four competitions.

The experimental design was a four by three cell

design, set up so that the results could be treated by a two-way analysis of variance (Anova 25). The two independent variables were the four athletic teams and the three self-report questionnaires. One-way analyses of variance (Anova 11) and the Scheffé multiple comparison procedure were also applied to the data to determine where the significant differences occurred.

The Test-retest reliability check found high reliability for both the Perceived Social Facilitation Questionnaire and the Trait Anxiety Inventory. The two-way analysis of variance (Anova 25) demonstrated that significant differences did exist within the groups and the scales. In addition, this program found that the variances were homogeneous and significant interaction between the two independent variables (scales and groups) had not occurred. The one-way analyses of variance (Anova 11) and Scheffé multiple comparison procedure found no significant differences between the groups on either perceived social facilitation or trait anxiety. Significant differences did occur however, between wrestling and volleyball on state anxiety. Significant differences between each of the three scales were found for the two individual competition sports, wrestling and cross-country skiing, while no significant differences occurred between any of the scales for volleyball or water polo.

Conclusions

1. There are no significant differences between spectator sport athletes and non-spectator sport athletes in perceived social facilitation.
2. There are no significant differences between individual sport athletes and coaction sport athletes in perceived social facilitation in the spectator-present competitive situation.
3. There are no significant differences between the individual sport athletes and the coaction sport athletes in perceived social facilitation in the non-spectator competitive situation.
4. There are no significant differences between spectator sport athletes and non-spectator sport athletes in state anxiety in a competitive situation.
5. There are significant differences between individual sport athletes and coaction sport athletes in state anxiety in the spectator competitive situation.
6. There are no significant differences between individual sport athletes and coaction sport athletes in state anxiety in the non-spectator competitive situation.
7. There are significant differences between the state anxiety and trait anxiety of the individual sport spectator athletes (wrestlers).
8. There are no significant differences between the state anxiety and trait anxiety of the coaction sport spectator athletes (volleyball players).

9. A reliable and valid instrument for measuring social facilitation effects as perceived by the athlete has been developed.
10. There are no significant differences in perceived social facilitation effects between athletes of selected physical activities.
11. The presence of others increases the individual's anxiety level significantly only in physical activities having bodily contact and individual performance.
12. There are no significant differences in trait anxiety between athletes of selected physical activities.
13. There are no significant differences between the best and poorest performers of selected physical activities in perceived social facilitation effects.
14. There are no significant differences between the best and poorest performers of selected physical activities in state or trait anxiety.

Recommendations

1. Further examination of Cottrell's evaluation apprehension hypothesis is required as it appears that the evaluative influence of the audience has little effect on experienced competent athletes. In addition, it seems the learning theory technique of "summation" appears to have little effect on these athletes. Future studies should examine athletes who differ in experience or who compete in front of audiences differing to a greater degree in size.

2. Further study using the perceived social facilitation questionnaire is required to determine if this instrument has the sensitivity required to measure differences in the athletes' perceptions of the audience. A possible way of doing this is comparing the scores of experienced versus less experienced groups competing in the same activity. A second method might be to have one group perform two activities in a social situation; the first they would be experienced with, and with the second activity, they would have very little or no experience.
3. Future social facilitation field studies should be cognizant of the influences produced on anxiety levels by individual and contact activities as compared to coaction and non-contact activities. It seems very probable that the combination of individual performance and bodily contact in an activity have a much greater affect on an individual's anxiety level, and possibly in turn, his performance, than the presence of an audience.

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APPENDIX A

SELF REPORT RAW SCORES

WRESTLING

Rank	S1	S2	S3	S4	$\bar{S}$	T1	T2	SF1	SF2
A	40	35	47	59	45.25	36	38	44	42
B	34	45	47	43	42.25	38	32	35	36
C	49	44	40	67	50.0	47	48	40	39
D	43	40	47	60	47.50	34	41	39	50
E	27	43	30	56	39.0	34	31	30	31
F	51	49	55	39	48.50	30	35	50	45
G	50	48	48	49	48.75	46	48	45	44
H	40	69	75	76	65.0	20	23	53	53
I	31	32	32	41	34.0	27	27	28	33
J	50	43	52	49	48.5	29	31	38	45
$\bar{X}$	41.5	44.8	47.3	53.9	46.87	34.1	35.4	40.2	41.8

VOLLEYBALL

Rank	S1	S2	S3	S4	SX	T1	T2	SF1	SF2
A	51	38	35	41	41.25	33	34	33	32
B	29	28	27	28	28.0	30	27	39	40
C	31	31	34	26	30.5	28	25	25	29
D	31	28	35	32	31.5	30	28	37	35
E	29	33	36	33	32.75	29	27	29	35
F	41	35	41	39	39.0	29	32	39	35
G	43	40	35	37	38.75	43	42	42	40
H	42	40	36	37	38.75	35	37	32	31
I	47	46	46	46	46.25	39	38	53	54
$\bar{X}$	38.22	35.44	36.1	35.4	36.30	32.88	32.22	36.55	36.77

WATER POLO

Rank	S1	S2	S3	S4	SX	T1	T2	SF1	SF2
A	47	46	58	67	54.5	34	33	43	38
B	31	57	25	--	37.66	29	32	52	47
C	37	46	36	40	39.75	46	50	40	48
D	35	43	38	34	37.5	35	36	31	31
E	32	27	47	25	32.75	25	28	29	33
F	53	57	--	54	54.66	42	40	33	38
G	45	46	45	37	43.25	47	42	31	30
H	47	45	44	45	45.25	39	38	43	41
I	38	46	41	--	41.66	34	32	31	30
J	59	59	--	56	58.0	55	52	52	51
K	34	38	42	40	38.5	35	36	36	34
L	32	44	24	24	31.0	30	29	48	46
$\bar{X}$	40.83	46.16	40.	42.2	42.87	37.58	37.33	39.08	38.91

CROSS-COUNTRY SKIING

Rank	S1	S2	S3	S4	SX	T1	T2	SF1	SF2
A	31	30	33	--	31.3	22	31	36	37
B	53	51	46	--	50.0	34	28	31	26
C	62	47	--	--	54.5	22	39	36	33
D	44	40	31	--	38.3	33	25	43	41
$\bar{X}$	47.5	42.0	36.66	--	43.52	27.75	30.75	36.5	34.25

APPENDIX B

TEST-RETEST RELIABILITY DATA

TRAIT ANXIETY: TEST-RETEST RELIABILITY CHECK

Correlation coefficient expressed in terms of raw scores.

	X	Y	X^2	Y^2	XY
Wrestling					
A	36	38	1296	1444	1368
B	38	32	1444	1024	1216
C	47	48	2209	2304	2256
D	34	41	1156	1681	1394
E	34	31	1156	961	1054
F	30	35	900	1225	1050
G	46	48	2116	2304	2208
H	20	23	400	529	460
I	27	27	729	729	729
J	29	31	841	961	899
Volleyball					
A	33	34	1089	1156	1122
B	28	25	900	729	810
C	28	25	784	625	700
D	30	28	900	784	840
E	29	27	941	729	783
F	29	32	841	1024	928
G	43	42	1849	1764	1806
H	35	37	1225	1369	1295
I	39	38	1521	1444	1482

	X	Y	X^2	Y^2	XY
Water Polo					
A	34	33	1156	1089	1122
B	29	32	841	1024	928
C	46	50	2116	2500	2300
D	35	36	1225	1296	1260
E	25	28	625	784	700
F	42	40	1764	1600	1680
G	47	42	2209	1764	1974
H	39	38	1521	1444	1482
I	34	32	1156	1024	1088
J	55	52	3025	2704	2860
K	35	36	1225	1296	1260
L	30	29	900	841	870
X-Country Ski					
A	22	31	484	961	682
B	34	28	1156	784	952
C	22	39	484	1521	858
D	33	25	1089	625	825
Sums	X=1199	Y=1215	X^2=43173	Y^2=44043	XY=43241

Pearson r Reliability Correlation Coefficient = .818

PERCEIVED SOCIAL FACILITATION: TEST-RETEST RELIABILITY CHECK

Correlation coefficient expressed in terms of raw scores.

	X	Y	X^2	Y^2	XY
Wrestling					
A	44	42	1936	1764	1848
B	35	36	1225	1296	1260
C	40	39	1600	1521	1560
D	39	50	1521	2500	1950
E	30	31	900	961	930
F	50	45	2500	2025	2250
G	45	44	2025	1936	1980
H	53	53	2809	2809	2809
I	28	33	784	1089	924
J	38	45	1444	2025	1710
Volleyball					
A	33	32	1089	1024	1056
B	39	40	1521	1600	1560
C	25	29	625	841	725
D	37	35	1369	1225	1295
E	29	35	841	1225	1015
F	39	35	1521	1225	1365
G	42	40	1764	1600	1680
H	32	31	1024	961	992
I	53	54	2809	2916	2862

	X	Y	X^2	Y^2	XY
Water Polo					
A	43	38	1849	1444	1634
B	52	47	2704	2209	2444
C	40	48	1600	2304	1920
D	31	31	961	961	961
E	29	33	841	1089	957
F	33	38	1089	1444	1254
G	31	30	961	900	930
H	43	41	1849	1681	1763
I	31	30	961	900	930
J	52	51	2704	2601	2652
K	36	34	1296	1156	1224
L	48	46	2304	2116	2208
X-Country Ski					
A	36	37	1296	1369	1332
B	31	26	961	676	806
C	36	33	1296	1089	1188
D	43	41	1849	1681	1763
Sums	X=1346	Y=1353	X^2=53828	Y^2=54163	XY=53737

Pearson r Reliability Correlation Coefficient = .869

APPENDIX C

STATE-TRAIT ANXIETY INVENTORY

SELF-EVALUATION QUESTIONNAIRE

HOW DO YOU FEEL RIGHT NOW

NAME _____ NUMBER OF MINUTES/HOURS PRIOR TO COMPETITION _____ DATE _____

DIRECTIONS: Mark the answer which seems to describe your present feelings best --- YOUR FEELINGS AT THIS VERY MOMENT.

		NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1.	I feel calm	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
2.	I feel secure	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
3.	I am tense	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
4.	I am regretful	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
5.	I feel at ease	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
6.	I feel upset	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
7.	I am presently worrying over possible misfortunes	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
8.	I feel rested	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
9.	I feel anxious	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
10.	I feel comfortable	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
11.	I feel self-confident	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
12.	I feel nervous	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
13.	I am jittery	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
14.	I feel high strung	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
15.	I am relaxed	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
16.	I feel content	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
17.	I am worried	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
18.	I feel over-excited and "rattled"	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
19.	I feel joyful	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
20.	I feel pleasant	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO

YOUR SELF-EVALUATION QUESTIONNAIRE

HOW DO YOU GENERALLY FEEL

NAME _____ NUMBER OF YEARS IN COMPETITION ____ ANY PREVIOUS ATHLETIC INJURY (DESCRIBE)_____

SPORT _____ AGE _____

DIRECTIONS: Mark the answer which seems to describe your general feelings best.

1. I feel pleasant	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
2. I tire quickly.	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
3. I feel like crying.	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
4. I wish I could be as happy as others seem to be	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
5. I am losing out on things because I can't make up my mind soon enough	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
6. I feel rested	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
7. I am "calm, cool and collected"	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
8. I feel that difficulties are piling up so that I cannot overcome them	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
9. I worry too much over something that really doesn't matter	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
10. I am happy.	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
11. I am inclined to take things hard	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
12. I lack self-confidence.	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
13. I feel secure	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
14. I try to avoid facing a crisis or difficulty. .	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
15. I feel blue	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
16. I am content.	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
17. Some unimportant thought runs through my mind and bothers me.	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
18. I take disappointments so keenly that I can't put them out of my mind	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
19. I am a steady person.	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
20. I get in a state of tension or turmoil as I think over my recent concerns and interests . .	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS

APPENDIX D

PERCEIVED SOCIAL FACILITATION QUESTIONNAIRE

General Information

Name _____

1. Your intercollegiate sport is: . . . . . a) wrestling
   b) volleyball
   c) water polo
   d) cross-country skiing

2. Your age is: . . . . . a) 18 or under
   b) 19-21
   c) 22 and over

3. How many years of intercollegiate experience have you had in this sport? . . . a) 1st year
   b) 2 years
   c) 3-5 years

4. How would you rate your ability in this sport, compared to your team mates? . . . . a) below average
   b) average
   c) above average

5. How would you rate your ability compared to athletes across Canada in this sport at the intercollegiate level? . . . . . a) below average
   b) average
   c) above average

Questions

Directions: Read each question carefully and circle the answer which best represents your feelings in a competitive situation.

		ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
1.	During competition, I hear the noise made by observers				
2.	I feel that observer noise interferes with my concentration				
3.	I am more aware of observers when I commit an error .				
4.	I feel that I have let my fans down when I lose a competition				
5.	I pay no attention to observer noise				
6.	I feel that the presence of close friends or family improves my performance				

7.	During competition, I hear specific comments from observers.	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
8.	I feel that verbal encouragement from observers improves my performance	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
9.	I am more aware of observers when I perform especially well	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
10.	I feel that razzing by 'home-town' fans hinders my performance	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
11.	I am indifferent towards observers	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
12.	Prior to competition, I am keenly aware that my performance will be observed	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
13.	I feel that loud continuous razzing hinders the performance of all athletes	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
14.	I feel that observing a particularily outstanding play by a teammate improves my performance. . . .	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
15.	I feel that razzing by observers hinders my performance	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
16.	I feel that observing a costly error by a teammate hinders my performance	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
17.	I feel that the presence of close friends or family increases the pressure for me to perform well . . .	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
18.	During the last minute of competition I am aware of observers	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
19.	I feel that loud continuous razzing hinders my ability to perform well	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS
20.	I feel that the presence of close friends or family hinders my performance	ALMOST NEVER	SOME-TIMES	OFTEN	ALMOST ALWAYS